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ABSTRACT

A study of the advantages and disadvantages of various types of infant care provided by someone other than the mother is presented. Problems listed as occurring in intervention programs include: maternal-child attachment, individual differences among infants, planning problems, and emotional-social development. Types of intervention studied are: the center model (outside-the-home center), the tutorial model (within a home setting), the home-visit model, and the parent-group model (teaching of parents). Role of the caregiver is conceptualized as follows: (1) home visitor - a guest having a position of low power in the home, and (2) teacher - one who aids the child in achieving a sense of competence. The point is made that evaluation of caregiving programs for low-income children is difficult and often confounded by complex motivational factors, such as a mother's attitudes toward intervention. The importance of dissemination of infant programs is stressed. (CK)

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INFANT DEVELOPMENT RESEARCH: PROBLEMS IN INTERVENTION

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For those who are or will be involved in the growing variety of programs for infants and their families, it is instructive to consider the spectrum of possible problems associated with establishing, operating, and evaluating research projects in infant intervention. At each choice point where problems can arise, we shall attempt to identify potential decisions and evaluate the feasibility, economic implications, and research evidence for or against each alternative.

Historical Problems: The Effects of Day Care

Maternal-Child Attachment

The earliest problem faced historically in infant intervention research was posed primarily by clinicians, well aware of findings of severe disturbance in hospitalized infants separated from mothers (Bowlby, 1952), findings of growth failures in institution-reared infants (Dennis & Najarian, 1957), and even findings of a marked lag in language development in infants reared in the countryside by paid peasant women (Brunet & Lézine, 1965). A major concern was that intervention programs which involved separation of mother and infant for lengthy daily periods would tend to weaken the mother-infant bond despite the best intentions of interventionists to prevent developmental deficits (such as the downward drift in IQ observed in longitudinal studies of low-income infants) by optimizing the developmental milieu of the infant. Fear of tampering with the development of mother-infant attachment was responsible for decisions of some center-based programs not to take infants younger than six months of age into a program. Addressing themselves to this concern particularly, Caldwell and her associates (Caldwell,

Wright, Honig, & Tannenbaum, 1970) used in-depth maternal interviews to assess mother-infant attachment patterns of 21 two-and-a-half-year-old home-reared infants, and 18 infants who had spent at least one year in an infant care program. No dilution of the maternal-child attachment relation was found as a result of attendance in the intervention program. Keister (1970), whose infant care program included infants as young as three months, and whose attention to the health and socio-emotional needs of infants was meticulous, likewise reports no difference in research results comparing infants in her program with home-reared controls. Erikson's thesis that the quality not the quantity of mothering is what counts seems to be borne out by such results. Additionally, as Stevenson & Fitzgerald (1971) have pointed out, the growth failures encountered in group care may well have resulted from inadequacies in the environmental settings in which the infants were reared.

Individual Differences Among Infants

Bowlby, in a letter to Dr. Bettye Caldwell, has raised another interesting clinical problem with respect to infant intervention and attachment. He questions whether intervention which involves early separation of infant and mother might in fact enhance dependency needs or anxieties in certain infants rather than dilute them. Growth of emotional independence from the mother might then be hindered. Such effects may not be recuperated when mean attachment scores are examined for a project. Mean scores may even mask attachment dilution effects in other infants. Attention to the growth careers of individual infants in any intervention project thus seems of paramount importance. Only regard for the progress of each individual child in a program can alert us to those infants, or perhaps types of infants, for whom certain kinds of intervention--in a day-care setting for example--may not be suitable.

Long-Term Effects

The problem of long-term effects of day care or intervention centers on emotional-social development is even more complex. The relative "infancy" of such intervention projects has until the present precluded the possibility of finding large samples of older children who have experienced intervention for one or more years in infancy and whose attachment patterns with parents can be assessed in relation to that experience. Another yet-to-be adequately assessed research area is the possibility raised by Kagan & Whitten (1970) that the long-term effects of extensive infant intervention may detract from the parent's basic responsibility for child-rearing. One could in turn argue, however, that such responsibility may be tenuous or stressful for a parent initially. The services and support then offered by a family-oriented intervention program may serve rather to foster the growth of attachment and parental responsibility over time.

Intervention and Peer Relations

The long-term effects of early group care on peer relations is of historical and cross-cultural interest. Freud & Dann (1951) found that concentration camp orphans, institution-reared after the war, showed intense attachment and loyalty to each other. Recently, Lay & Meyer (1971) have found that infants reared together in one intervention program and then kept together in another program showed a marked preference for each other's company despite the addition of other preschoolers into the continuation program. Such strong peer preferences may be viewed both as a problem and a benefit of an infant program.

Planning Problems: Choice of an Intervention Model

Factors Which Influence Choice

In planning an infant care project, a program director may declare himself with respect to one intervention model or utilize attractive features of several

models. His model may be based on philosophical or psychological convictions about what are the optimal conditions for infants and families to flourish. The model may meet the needs of working mothers in priority to other considerations. The model may be chosen with strong consideration of its exportability. That is, the director may be interested in developing a curriculum and designing environmental supports which are both replicable and disseminable to other communities and projects. From an economic point of view, models which have provided one adult for every one-to-two babies may simply be unfeasible, unless large commitments are made by volunteers and the logistics and training aspects of such commitments can be met. Legal constraints may be paramount. Some states forbid group care of infants outside a home. For the home-care model, in which a neighborhood mother is trained to care for infants in her home, little research evidence of effect on child development is available. Such a setting may restrict an infant's access to a variety of environments such as play yards, or stores, since there is no other adult to share caregiving tasks.

Data from a variety of intervention models are currently available to assist in the decision-making process (Appalachian Regional Commission, 1970; Butler, 1970; Grotberg, 1971). Aside from differences in degree and kind of structuredness, programs differ also in the settings in which they occur and the persons involved in program delivery.

The Center Model

Rather extensive use has been made of outside-the-home centers for infant intervention by Caldwell & Richmond (1968), Dusewicz, R. A., & Higgins, M. J. (1971), Gallagher at the Frank Porter Graham Child Development Center (Appalachian Regional Commission, 1970, pp. 18-21), Heber (Strickland, 1971), Keister (1970), and Sigel (1971). In general the rationale for choosing such a model

involves the provision of important services such as baby-sitting, pediatric care, and the provision of nutritious meals. Choice of a center model may also involve the recognition that a "more intensive and cumulative contact with the social and non-social environment" can thus be provided (Sigel, 1971, p. 9). Infants in center-based programs (whether they are highly structured or follow child-choice of activities) often register considerable developmental gains during their enrollment (Caldwell & Richmond, 1968). They have also been reported to exhibit marked enjoyment of activities and social interactions (Keister, 1970). Center-based programs can often provide a more "total" environment to shape and reinforce those multiple developmental processes and competencies which have been identified as "goals for education" (Biber, 1969, p. 11). Where infants are persistently at nutritional deficit within the home environment, the use of a center model may provide that consistent boost in nourishment which the infant requires to maintain good health and lessen proneness to respiratory infections and to hemoglobin deficiencies (Osofsky & Osofsky, 1971).

One drawback to the center-based model exclusively concerned with infants is that an aura of "we-know-best-for-baby" professionalism may alienate parents and community from the intervention program and contribute to the isolation of already alienated poverty parents from involvement with one more educational institution. Another consideration is the costly nature of such centers. Unless a center intervention program is supported by research or community funds, individual parents may find it impossible to take advantage of such services for their infants.

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The Tutorial Model

A more economical model which has been tried is the tutorial model. Trained child development personnel attempt, usually within a home setting, to extend

the range of experience and competence of an infant. Palmer (1972) has used the tutorial model with older infants outside the home setting with effective results. The tutorial model, which concentrates on encouraging infant developmental advances and which involves parents very weakly if at all, has proved effective in sustaining infant developmental scores, or improving them relative to controls, during the time the intervention is ongoing (Painter, 1968; Schaefer, 1970). Learning materials, games, tasks, songs, and ideas developed by infant tutors for these models, testify to the concern and ingenuity manifested by the tutors. The tutorial model has the advantage of meeting objections that intervention which involves removing the infant from the home for long periods of time may have deleterious emotional effects. However, tutoring which does not involve parents may have negative consequences for an infant because learning situations and family interactions occur separately for him.

Home-Visit Model

Children who have participated in infant development programs sometimes fail in follow-up studies to sustain earlier gains. It has been assumed that lack of parental involvement and lack of follow-up or continuity in intervention may be responsible for such declines. Parent models have been introduced to ensure continuity of the intervention process. Giesy (1970, Gordon (1971b), Gray (1971), Lally (1971), and Weikart et al. (1969) have trained home visitors in their programs with low-income mothers to offer supportive suggestions and demonstrations in the areas of nutrition, child development, Piagetian games, toy creation, and language development. Levenstein's (1971) Toy Demonstrators during their home visits suggest alternative ways to use toys and books, which are offered as gifts to mothers, to encourage infant growth.

The Parent-Group Model

A parent model which has been found successful in programs for older preschoolers by Karnes et al. (1968), and by Nimnicht (1970) is characterized by

teaching of parents in groups. Parents then return home and are better able to apply intervention techniques and behaviors with their own children. Models which involve parents to a marked degree in their infants' growth would seem to meet several basic clinical and sociological objections to intervention programs. Parent models strengthen rather than weaken parent-child responsibilities and bonds. They ensure a longer term intervention than the few years most funded project personnel function. They offer the potential of "vertical diffusion" to other children in the family (Gray & Klaus, 1970). Additionally, they train the mother herself as a change-agent and thereby decrease her sense of powerlessness--and not only in her mothering-and-educating role. If the mother's sense of self-competence and achievement with regard to child-rearing has been sustained, she may more successfully relate to problems of poverty or ethnic discrimination as they affect her and her family. When parents are involved in infant intervention programs we emphasize even more strongly our philosophical conviction that a program must support and supplement but not supplant parenting. It is well to make this conviction explicit if we wish the trust and cooperation of families in intervention projects.

It is also well when we include parents to make clear that we do not automatically equate difference with deficit (Cole & Bruner, 1971). Cultural differences, reflected in food patterns and holiday activities, for example, should be respected and incorporated into programs wherever feasible and with the parents' help. Parent participation can ensure that the match between an operating model and the population served is a good one. Participation may be of varied sorts. The parent may do volunteer work in a center program, be in a teacher-aide training program for parents of enrolled infants, or represent participative management as when parents and teachers together select and purchase toys for a program.

Staff Selection

If a center-based program is planned, certain logistic problems must be solved with reference to ordering equipment, leasing buses, arranging diaper service, and securing pediatric and food preparation services. Whatever the setting of the program, however, staff selection and training are of critical importance. Recent failures to discover which of a set of parametric variations on intervention models is more effective for promoting child development may be due to this staff variable. Many methods--sequential learning, discovery, polar concepts, verbal bombardment, Piagetian task, or open classroom--may succeed in fostering a young child's development when the personnel involved are committed to children, enjoy children's growth, and are sensitive to ways to facilitate that growth. Thus, the director with a genius for selecting, training, and keeping personnel may in the end find sustained infant developmental gains in his program no matter what his curriculum or model may be nor how fancy his toys nor how sequential his learning lessons.

Babies and children come to understandings and competencies through many routes. Given a varied environment and a baby normal at birth and adequately fed, the adult who varies, patterns, and regulates the input an infant receives, and who also nourishes the infant's self-initiated attempts to cope, to comprehend, and to communicate in his world is the indispensible catalyst for infant growth. Even in a center environment where other infants are available for interactions and as sources of stimulation, research indicates that the adult remains during the first two years of life the prepotent dispenser of social and cognitive transactions (Honig, Caldwell, & Tannenbaum, 1970; Maudry & Nekula, 1931).

Automated Teachers Versus Human Ones

The importance of the adult for early infant development cannot be overemphasized. Recent studies which program babies' cribs show us that indeed

babies' behaviors can be controlled by external programmed object-stimuli (Friedlander, 1971; Watson, 1971). However, the extensive use of toys and automated equipment is no substitute for people. Do we want babies to exhibit smiles primarily to three-dimensional cut-outs or tape-recorder playbacks? Or do we want babies to relate to people initially, to trust people as the sources of comfort, of interesting events, and of rewards? Automated equipment should be considered an adjunct to, not a substitute for, human teachers in infant intervention programs.

The Ideal Caregiver

Who is the ideal candidate for intervention program staff--whether working directly with parents or infants? He or she should have: love for babies, cheerfulness, patience, willingness to learn (from parents and babies as well as psychologists and supervisors), comfortableness with quirks and customs of people, a knack for seeing the learning potential in ordinary situations such as a dropped mitten, or a new food at mealtime, and the ability to recognize and take joy in small successes. If this prescription seems to be too good to be true--at least let us keep it as a firmly held ideal while addressing ourselves constantly to the problems that arise in trying to find or create such caregivers.

Sometimes bilingual skills will make the difference in staff effectiveness with families. Sometimes strong hips for carrying a baby will make the difference in easing a disconsolate infant's crying during his first days at a center intervention program.

Staff Diversity

Hiring some women, some men, some professional, and some paraprofessional staff will enable an intervention program to ensure a diversity of life styles, and of life experience in the personnel serving parents and children. If staff

has been well selected, later interpersonal frictions may well be minimized. When paraprofessionals are selected for the intervention staff, special training techniques such as role-playing and small group workshops may be especially effective (Lally, Honig, & Caldwell, 1971).

It is also wise in hiring infant teachers for a center program to include some trained as nurses who can be taught special curricular games and social skills with babies.

Staff Training

Theoretical Problems

Consideration of theoretical issues in conceptualizing the role of the caregiver may be of relevance in the process of staff selection. Is the caregiver to be considered primarily a source of emotional-tactual satisfactions á la Harlow or Spitz? Is he or she simply a source of reinforcements á la Gewirtz? Is the caregiver, as Lewis & Goldberg (1969) would have us believe, a source of contingent reinforcers which teach the infant that he is important and competent because his behaviors have consequences and thus motivate him to accomplish a wide range of behaviors? If the intervention program director is more interested in infant development than in proving that one caregiving function is more likely or more effective than another he will probably answer "yes" to all these questions. In so doing he may increase the probability that his intervention procedures will succeed, because he is not trying artificially to fragment caregiver functions facilitative of infant development. Awareness of the value system underlying the intervention research is important to those responsible for training staff (Starr, 1971).

The role of the home visitor. Some problems which concern the director responsible for staff orientation and training are tied to his conceptualization of the multi-faceted role of the home visitor, who is often a woman selected

from the same social milieu as the parent. Weikart (1969) suggests that the home visitor perceive herself as a guest having a position of low power in the home. She may also be a casual friend and information-giver (with respect to learning games and alternate ways of discipline), or offer toys and books (Levinstein, 1971). She may give suggestions for and then participate in family activities and outings (Giesy, 1971). In Lally's (1971) program she may also occasionally serve as a mother-surrogate, as a guide to social agencies and community supports, and as a workshop teacher of, for example, tie-dyeing or candle-making activities requested by a group of mothers. Strong emphasis may be placed on the home-visitor's ability to increase a mother's pleasurable social interactions and teaching behaviors with her infant. Which component of this complex role may be most effective in helping a given mother to enjoy and facilitate her infant's growth is possibly an unanswerable research question. Again, the director's concern with infant development may support a decision to sensitize home visitors to the potential effectiveness of any or all of these roles so that they can be used when warranted by the home situation and by maternal as well as infant needs.

The role of the teacher. The role of the classroom teacher in fulfilling program goals has been conceptualized in several ways. Shall he or she create a learning environment which permits the learner to explore freely and is self-pacing? A Piagetian viewpoint may dictate that this is the only way "learning-that-sticks" ever gets done. Shall the teacher, instead, structure and pattern the infant's activities so that the infant-learner can make a series of interconnected discoveries about his physical or social-cultural world? Bereiter & Engelmann suggest (1968, p. 512) the teacher is someone who by direct, highly controlled instruction can nourish not only positive learning attitudes and abilities but also divergent thinking and creative spontaneity in tasks. Perhaps

a categorical either-or position here is simply nonproductive for an infant intervention program. Recognition of the child's need to program his own time, to use his own investigative methods, and to move at a pace unique to his capacities has never meant that the adult totally abdicates a facilitative role in this process. As Bruner (1971, p. 105) succinctly phrases it, the caregiver must "provide the occasion for the child to move successfully toward a sense of competence."

Katz (1970), in an analysis of teacher role models in early childhood programs, has distinguished among three potential teacher role models in intervention settings: the nurturant maternal model, the therapeutic model, and the instructional model. Again, it is important when surrogate rearing of infants is involved to make sure a variety of role models, congruent with his developmental needs and his daily activities and routines, is available to the infant. The intervention program director who is determined to research the relative effectiveness of any of these models, and who insists that one role model exclusively be assumed by a given teacher, may short-change the infants in his program.

Practical Problems

How best or most effectively can staff training be accomplished? A preservice training program for infant caregivers may be implemented in several weeks or several months. A program director concerned with the quality of program for infants and with staff morale will build a continuous inservice training component into the program. Finding time to arrange for inservice workshops, discussions, and case conferences is often a vexing problem. Using infant nap hours, or recruiting volunteers to replace teachers for an hour may provide the time slots needed for training. Another method is to assign a program supervisor to rotate among classrooms, model skills with infants, and offer helpful suggestions when teachers ask for them. In a home visit program, one day a week may be devoted entirely to inservice training and conferences.

The amount and time given to training will be constrained by available planning funds, federal guidelines, community wishes, and certainly by the skills and sensitivity levels of the trainees themselves. Some recent publications offer technical assistance for infant teacher training (Day Care Resources Project, 1971; Honig & Lally, 1972).

If it is feasible, a director may decide to suspend a program for a week or two annually in order to carry out intensive re-training workshops. This kind of intensive effort at reorienting and retraining staff offers positive motivational consequences for teachers. It also offers a director a chance to bring all program staff members--including bus drivers, teachers, home visitors and cooks--together into a training program. Diaries turned in daily by participants can help trainers redirect their efforts daily toward greater clarification of certain topics and consideration of other topics trainees wish to have placed on the agenda.

Program Operation

Staff Assignments

If infants under 15 months are to spend a good part of their waking hours with caregivers other than their own parents, special needs for attachment must be met. Babies in the first year of life particularly need a "special person"--someone who is there to comfort, to play loving games, to bring forth laughter and to reassure a tiny adventurer that he may touch or creep or explore beyond the former boundaries of his known world. Infants who attend intervention programs may be multiply-mothered or mothered by a person too overwhelmed with her problems to cope with a baby's demands for "specialness." In such cases it is even more important to make sure, despite the sharing of tasks which goes on in the ordinary nursery, that each infant grows to know whom he can count on, his very own, his "special person." Assigning three or four babies to a caregiver

in the first year of life can nurture such a special relation. Directors and caregivers need to be flexible however. If a baby quiets or "lights up" for another caregiver more easily, perhaps a switch should be made. Not all babies and caregivers "take" to each other. Self-selection by an infant can still be compatible with ensuring him a special person.

How Many Babies?

How many infants and staff shall be included in a given program? There are often peculiar changes in the quality of staff interactions with children and children's response to a program environment when too many people are clustered together. It is easy for a teacher to say of 45 two-to-three-year-olds, "I can't keep the skill levels or special needs of so many children in my head." If the 45 toddlers are broken into groups of 15 with three teachers responsible for each group, then it becomes easier for a caregiver to focus on and be alert to each child's special needs or difficulties. Funding agencies may find it more facilitative of infant development to encourage directors to plan smaller programs for infants. Directors may arrange for cross-testing of infants with other directors or for pooling of assessment measures with other centers rather than to try to provide for the needs of hundreds of infants in one necessarily bureaucratized organization.

Time Decisions

How long should an infant spend in an intervention center? What age should he enter? How long should a program plan to offer care, whether home-tutorial or center-based? Sometimes intervention centers try to meet parent needs and offer care from 7:30 a.m. to 6:00 p. m. Indeed, the French créche system has been offering just such care for decades. There is no research yet available in our culture to tell us whether a few hours' stay at a center differs in its impact on social-personal or cognitive attributes from a 10-12-hour stay.

Age at entry into a program has received some research notice. Caldwell & Richmond (1968) found no particular advantage accruing on Cattell IQ tests to infants entering their program earlier or later. Fowler (1971) found a pattern of mean cognitive gains favoring both earliness of entry into and length of time in program for advantaged infants. Gordon (1971) found that infants in his home visit program showed no gains at the end of two years of age if the intervention had occurred during the first year but not during the second. Heber (Strickland, 1971) reports that infants entering from birth with their mothers into an intervention program with intensively enriched curriculum exhibit markedly high IQ scores (33 IQ point mean gains) compared to controls after several years in the program. Lally (1971), who has recently developed a perinatal intervention program which brings nutrition information and child development skills to mothers from the sixth month of pregnancy onward, has reported for a small group of perinatal infants that Cattell IQ scores average 10 points higher than controls at six months of age. In general, no intervention programs which emphasize the quality of infant care and the importance of the family to the infant have shown detrimental effects of center intervention programs.

Program Content

Program supervisors in search of materials will find that suggestions for infant tasks, toys, and games have become more available in the past few years (Caldwell, 1971: Forrester, et al., 1971; Gordon, 1971; Gordon & Lally, 1967; Painter, 1971; Segner & Patterson, 1969). Although program ideas should be offered in detail and frequently to teachers, programs should also encourage teachers to create their own materials, games, and variants thereof. Particular stress should be placed on the use of caregiving routines to set the times and locales where learning activities are encouraged. During inservice training the importance of activities, such as reading to babies or providing many opportunities for coordination of vision with prehension, can be emphasized through presentation of corroborative research findings.

Difficulties may lie not in clarifying program goals and content to caregivers but in finding ways to teach caregivers to monitor their own behaviors and readjust them in line with program goals so that intended intervention behaviors are visible, measurable, and sustained. For example, in a recent study of classrooms in Head Start, (Meyer & Lindstrom, 1969) a program dedicated certainly to improving the self-image of disadvantaged youngsters, a great deal more caregiver blame than praise was found to be distributed to youngsters. Some teachers do not hear their own negative voice tones. They do not remember not to shout negative commands from a distance to infants but instead to go over to the infant who is, for example, happily pulling soiled diapers out of a pail. Some teachers who get compliance from some toddlers in a group do not remember to reinforce those toddlers with positive reinforcers; instead teachers may fret at or concentrate on those who didn't come right away for tooth-brushing time, for example.

Supports for Personnel

Prevention of interpersonal frictions among teachers may best be handled by (a) clear structuring of grievance mechanisms, and (b) by frequent small staff meetings to discuss any confusing program operations or policies which may contribute to friction.

Assessment Options

Although a host of IQ, personal-social, and achievement measures exist for older children and even for preschoolers, the paucity or unreliability of instrumentation in infancy has raised thorny issues for intervention programs. Research to determine effective teaching processes and infant curriculum components has likewise been sparse.

Infant Assessments

Developmental tests. Developmental quotients in infancy have long been looked upon askance as nonpredictive of later IQ scores (Bayley 1965). Yet obtaining such infant test scores was often a necessity if one purported to look for developmental gains from an intervention program. Recently some programs have administered Piagetian sensori-motor scales to assess the effects of a specifically Piagetian program on infant development (Honig & Brill, 1970).

Learning and conditioning measures. Conditioned responses such as vocalizations or head turning have been considered as indices of early learning. In intervention programs designed for infants at risk, an infant's inability to respond to conditioning procedures may be used as an index of functional deficit prior to nutritional supplement or medical and other treatment. Lewis & Goldberg (1969) have suggested that response habituation measures may distinguish among infants reared in enriched or impoverished environments.

Naturalistic observations. Efforts to monitor development, particularly in socio-emotional areas, using ecological assessments are becoming more widespread for infants and older preschoolers. Honig, Caldwell, & Tannenbaum (1970), using an elaborate numerical coding system, APPROACH, designed to be applied in naturalistic settings, tallied the frequencies of such activities as conversing, information-giving and dramatizing, directed to and from infants (and older preschoolers) and adults in classrooms. Lay & Meyer (1971) have recently reported 9000 one-minute time samples of naturally occurring behaviors, such as verbal and gestural interactions, in a group of 3-5 year olds. Escalona (1972) suggests that we need to explore the variety and range of social contexts that occur day by day in infant lives and record all encounters between a baby and other persons. Ricciuti (1971) has developed an elaborate observational code to record infant postures, locations, and behaviors.

Language development. Language measures, of which quite a few such as the ITPA and the Peabody exist for older children and preschoolers, are scarce for the infancy period. Additionally, the relation of early babbling to later verbalization has not been well clarified. Cameron, Livson, & Bayley (1967) suggest that clusters of early vocalizing and language items are better predictors

of later Binet IQ scores than are standard tests. Some early tests of language exist, but many require gross judgments of infant competence. In assessment, single instances of competence may lead to assumptions of widespread language skills which are not in fact present. An Early Language Assessment Scale (ELAS) in use at the Syracuse University Children's Center measures (a) infant vocal response to,and (b) gestural and verbal decoding of the meanings of objects, sounds, words, facial expressions and gestures. Slobin (1972) has proposed that we look at all the words a baby uses in different contexts such as bath time or messy play.

Product vs. process measures. In general, there is a downgrading nowadays of "product" compared to "process" measures of child development. Although this emphasis on qualitative variables is important, problems still remain. Just how shall we assess "learning to learn," "joy and love of learning," "development of decision-making strategies," "social sensitivity," "variety and persistence in problem-solving attempts," "increasing ability to defer gratification or tolerate frustration " and other such qualitative characteristics of intervention success? Perhaps we should opt for observational strategies, using behaviorally defined categories of such qualities. These observations should be carried out not only in a center intervention program but in the home, where the transfer of such successes must occur as the ultimate "pay-off" of any intervention program.

Tester training. In many cases, a program director will find that infant testers may have to be trained specially for his program. Few universities teach infant testing. Few teach the particular skills and styles--almost magician-like--which are often required either to interest a nonverbal baby in using strange, new materials, or deftly to recuperate toys clutched from a prior item administration.

Where a particular linguistic or ethnic group is especially represented in the intervention program, the director may want to train personnel from these groups to carry out infant testing and family assessments rather than hire psychologists who have a background in child development and in testing. The advantages accruing to a project with tester personnel who come from the same cultural background as babies and their families may be worth the extra and intensive efforts necessary to accomplish such training.

Caregiver Assessment

Confirmation of teacher styles and skills in intervention programs has not kept pace with eloquent formulations of program objectives. A problem faced by any program, regardless of intervention strategy, is to ensure that caregiver behaviors in fact reflect program models in theory. Katz (1969) has made poignantly clear that a designation of "cognitively-enriched preschool program" compared to a traditional nursery program may in fact turn out actually to amount to more commands and restrictions placed on youngsters rather than the stated goal difference of specific increased curricular enrichment.

An observational rating scale "Adult Behaviors in Caregiving" (the ABC scale) recently developed by Honig (1972) at the Syracuse University Children's Center attempts to checklist the occurrence during 2-minute periods of teacher inputs to infants under 15 months of age in six major areas: language facilitation, positive reinforcement, negative reinforcement, Piagetian tasks, physical exercises and games, and bodily and environmental caregiving. Differences in teacher inputs in each area are readily apparent from frequency tallies. In-service training can be used to bolster areas where a given teacher is not providing sufficient input. Such a scale also pinpoints imbalances in teacher sharing of, for example, clean-up jobs. Thus inequalities which could lead to staff friction can be adjusted by the director who uses such information judiciously. A further advantage to observational systems lies in their adaptability to all daily caregiving routines which are the teaching situations par excellence with babies.

Maternal Measures

Since our ultimate goal in intervention is not only to prevent deficit but to ensure that the infants leaving our care will be sustained in sociable and cognitive ventures and adventures by family efforts, one important problem lies in the nature of the measures by which we can, with more or less confidence, assert that such sustenance will henceforth be offered.

Both Gordon (1971) and Lally (1971) have made use of home-visit observational checklists. However, such checklists can possibly be influenced by halo effects. The mother who has forced a home visitor to reschedule a weekly visit four times, because she neglected to be at home each time, may receive lower scores than the mother who is at home and accepts materials from the visitor, although the maternal interactions with infants may be quite similar.

Maternal tempo and style. More subtle problems of gauging the input of program on maternal care practices exist. These problems have nothing to do with the "what" of intervention tasks but the "hows" and "whens." Hess and Shipman (1967) showed several years ago that maternal teaching styles differed markedly among black mothers from different social classes. In our zeal to teach mothers intervention techniques we may become too enamoured of "what" to do with infants, such as: show the baby pictures and get him to label objects thereon, or help the baby complete a puzzle. The author has recently, with Dr. Robert Mercurio, coded videotapes of low-income mothers in teaching situations with their infants. What was often devastatingly evident was that some mothers had learned the ends but not the means of teaching interactions with infants. If the intervention program director were to assess what those mothers did, indeed they questioned, they informed, they conversed, they demonstrated. However, their tempo and pacing was often breathtakingly rapid for an uncomprehending toddler. The variety and number of inputs was changed so quickly that

often the infant literally had no time to respond--either accurately or compliantly or ineptly!

A maternal style which offers (1) judicious patterning of a variety of appropriate inputs, (2) attention to saliency and tempo of offerings and responses and to figure-ground clarity, plus (3) a constant adult alertness to the infant's interests and capabilities as well as to the adults' intentions in teaching, is hard to teach and hard to measure. Also, to say that "caregiver loving and child learning" are inseparables for infants is a far different matter from translating such dicta into subtle and creative interaction patterns between mothers and infants.

Despite instrumentation difficulties, an overall evaluation plan should include some assessment of the effect of intervention on the family. If we are truly concerned with the long-range continuing development of infants we shall not be satisfied only with five more Piagetian scale points or ten more IQ points gained by infants immediately prior to exit from a program. We may not even be philosophically agreed that the prime goal of intervention is "acceleration" of infants. However, we are concerned that more positive contacts with adults become available to infants and young children to sustain whatever development an intervention program has nourished and encouraged.

Non-obtrusive Measures

Non-obtrusive measures of progam effectiveness present almost as many problems as psychometric or observational assessment. For example, "days in attendance" at a center may not correlate highly with infant developmental score gains. Some non-working mothers who learn special games from the home-visitor may keep their infants at home once in a while and sometimes play these learning games. In such cases, attendance records will not reflect the amount or quality of program input to infants.

Using a nonobtrusive measure, percent of home visits successfully accomplished, Lally (1971, p. 35) has found a significant correlation with infant Cattell IQ scores.

Recycling Information Back Into the Program

One important decision a program may need to face is how to get assessment information gathered by testers, observers, home-visitors, and even site visitors, in a useful understandable form back to the intervention personnel. Feedback of this sort makes intervention personnel feel how important their efforts are. It keeps them in touch with other persons' assessments of where the infant is at in all his developmental endeavors. Feedback generates ideas for program improvement. Such ideas may range from new furniture-rug arrangements which entice a toddler to sit down with a picture book to new workshops which increase parental participation in a program.

"Sleeper" Effects of Program

Sometimes the social and cognitive facilitating effects of a program on family or infant functioning may not "show up" right away. Effects which can show up a few years later might be (a) an increase in organized behaviors in school and home, (b) decreased parent-child frictions in the family, (c) higher classroom achievement scores than controls, and (d) more socially cooperative behaviors with peers than may be usual in children from poor overcrowded environments, where daily stresses often increase chances for negative interactions. Funding problems may arise in attempts to monitor not only "who benefits from what," but "under what circumstances is the effect sustained?" Beller (1972, p. 36).

Evaluation

Evaluation Design

The pre-post intervention vs. control group model has some built-in hazards when dealing with low-income populations, due to geographical mobility and life

crises which cause subjects to disappear from the community or not to appear for testings. Longitudinal controls are to be preferred, but are often impossible to maintain when populations are highly mobile. Cross-sectional controls are easier to obtain, but it may be difficult to establish that they come from a sample identical initially to the intervention group. Additionally, some differences between retested intervention infants and cross-sectional controls must be attributed to the former's familiarity with testing.

Motivational factors. In some cases evaluation attempts are confounded by complex motivational factors which make comparisons of infant development within or outside of intervention programs more difficult. I am referring to the factor that makes one mother agree to place her infant in an intervention research program at six months and another mother refuse (yet perhaps regret her decision a half-year later when her baby is busy creeping into things!) As long as most infant programs are dependent on mothers voluntarily accepting daily, if brief, early separations from infants, then we will have to consider this motivational variable. Differences in maternal feelings and attitudes ultimately may affect subsequent infant development more than any specific care or teaching practices in the home or in intervention programming. It is often difficult to arrange conditions so that mothers equally consent to having very young infants in a program,and then to having the babies randomly assigned to the program or to control groups.

Another problem in defining an adequate control group for intervention infants stems from the nature of the family disorganization which may be present in certain populations. Pavenstadt (1964) has vividly described the differences between lower-lower and upper-lower poverty cultures. Where a lower-lower class mother of a control group infant is unable or unwilling to make the effort to bring

her infant in for developmental assessments, data may not be available for that infant. From a similar family an intervention infant may be picked up daily, brought into the intervention center, and tested or observed at will within that setting regardless of the mother's cooperation or lack of it in arranging for testing. Such infants may have no adequate controls since assessment may require a degree of parental cooperation which may not be forthcoming from the "matched" control family.

Such a problem again raises the ethical issue of a project's responsibility to provide auxiliary services to families. Provence (1969), in her research intervention project, assumes that services to parents which support their development as adults will make services for children more effective. If pediatric, social work, medical, and other services are made available through a project to families, parents are more likely to trust the members of a research team. Thus more information about parents and children will be available to the project. Certainly the chance for parental involvement in project goals for and with their children becomes more likely.

Dissemination

Programs, whether they are designed to optimize infant growth directly or to nurture parental ability to help babies flourish, need to share their experiences with others in the field. Journals which limit acceptance to published reports of completed programs pose a problem in communications for ongoing programs. A director may alleviate this problem by asking initially for adequate funds to disseminate his program findings to others engaged in such research. Hopefully, finding techniques and media for sharing prblems and successes will be the least of the problems encountered in program efforts to serve infants and families with greater mutual trust, joy, and effectiveness.

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Footnotes

1. Author Honig's address: Syracuse University Children's Center, 100 Walnut Place, Syracuse, New York, 13210.

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